SIEMENS

ADMS+

Creating and managing the next generation of Distribution Networks

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Energy Management Digital Grid Software & Solutions

Ever-growing grid challenges …

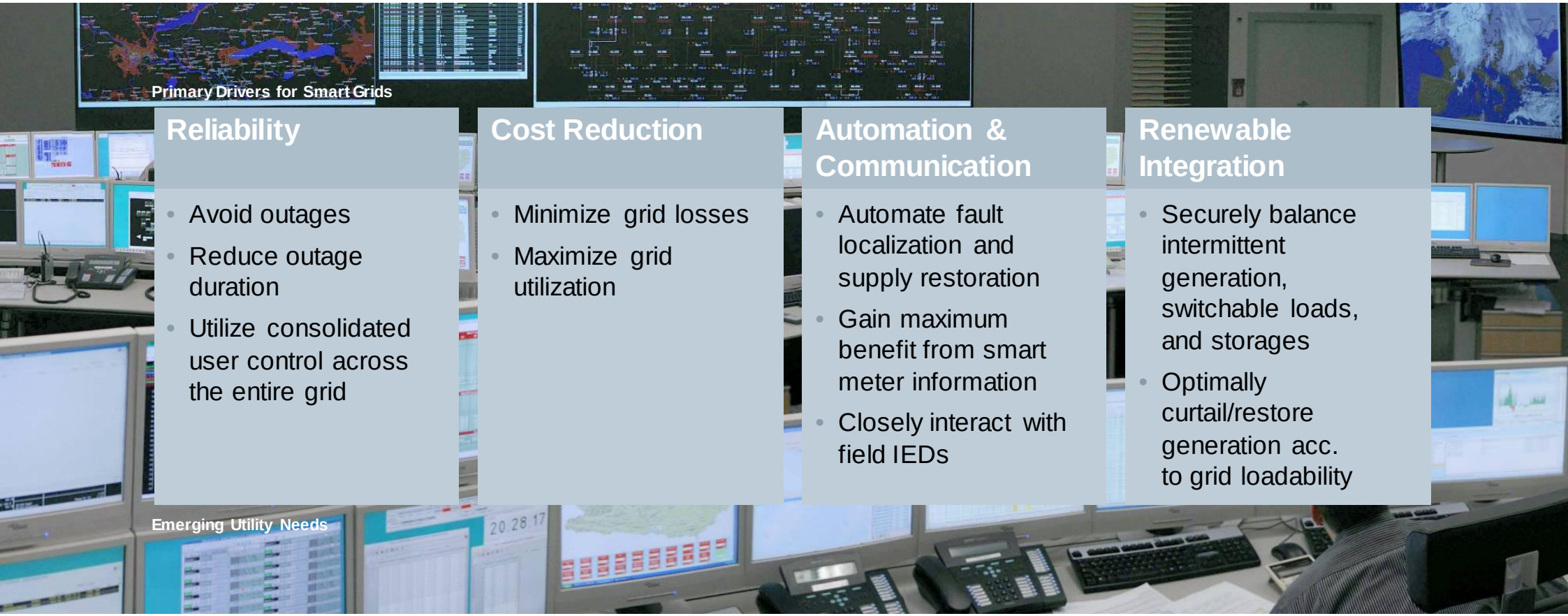
Increasing complexity of the grid due to integration of distributed energy resources and storage

Aging infrastructure

Growing regulatory and customer pressure to provide reliability

Climate change - extreme weather conditions

… and impact on distribution utilities



Primary Drivers for Smart Grids

Reliability

- Avoid outages
- Reduce outage duration
- Utilize consolidated user control across the entire grid

Cost Reduction

- Minimize grid losses
- Maximize grid utilization

Automation & Communication

- Automate fault localization and supply restoration
- Gain maximum benefit from smart meter information
- Closely interact with field IEDs

Renewable Integration

- Securely balance intermittent generation, switchable loads, and storages
- Optimally curtail/restore generation acc. to grid loadability

Emerging Utility Needs

The Answer
Spectrum Power™ with ADMS

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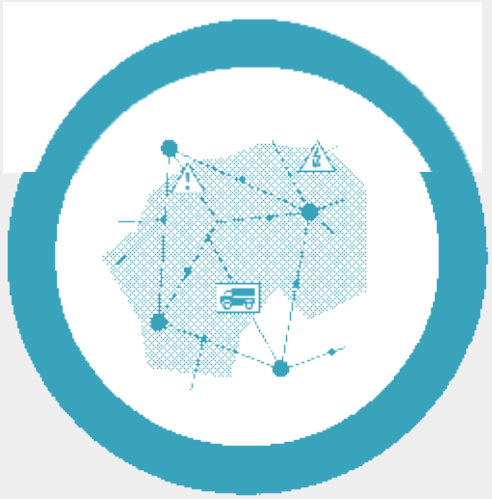
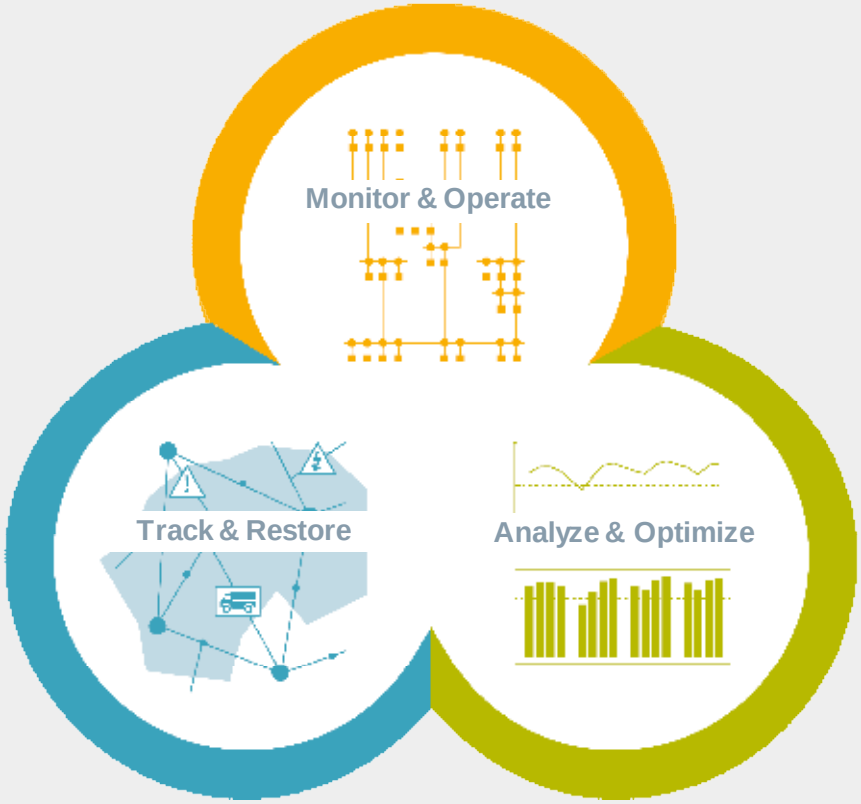
Next-generation power distribution management.

The Integration of Distribution SCADA, Advanced Fault and Network Analysis and Outage Management operated on one technology platform with one Common User Interface.

Spectrum Power™ ADMS
The Revolutionary 3-in-1 Solution



Track & Restore



Analyze & Optimize

Spectrum Power™ ADMS
The Revolutionary 3-in-1 Solution

Monitor, control and optimize the secure operation of the electrical distribution network.

Reduce network loading at peak times and increase asset utilization, network efficiency and reliability.

Proactively and safely guide operators when needed most, i.e. during storms and outage-related restoration activities.

Spectrum Power™ ADMS
Advantages in a Nutshell

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One system to bring your distribution management to the next level.

Holistic	One single operational technology platform and one Common User Interface for SCADA, Distribution Network Application (DNA) and Outage Management System (OMS).
Flexible	Adapt your system to emerging and ever-changing regulatory requirements through modularity and step-by-step extensions.
Transparent	Full network transparency, from High Voltage (HV) down to Low Voltage (LV), for faster decision-making.
Business-centric	Open to new Smart Grid business cases and to easy interoperability with any Enterprise IT.

Spectrum Power™ ADMS
Highlights

General ADMS functions

- Seamless and fully integrated SCADA, optimization applications and Outage Management
- Geospatial network graphics
- Automated GIS data import (bulk and incremental updates)

Distribution SCADA

- Full support of single and three-phase distribution networks
- Extended tracing for outages, trouble calls, crews, etc.
- Visualization of topology changes before execution
- Online-editable, temporary network elements

Distribution Network Applications

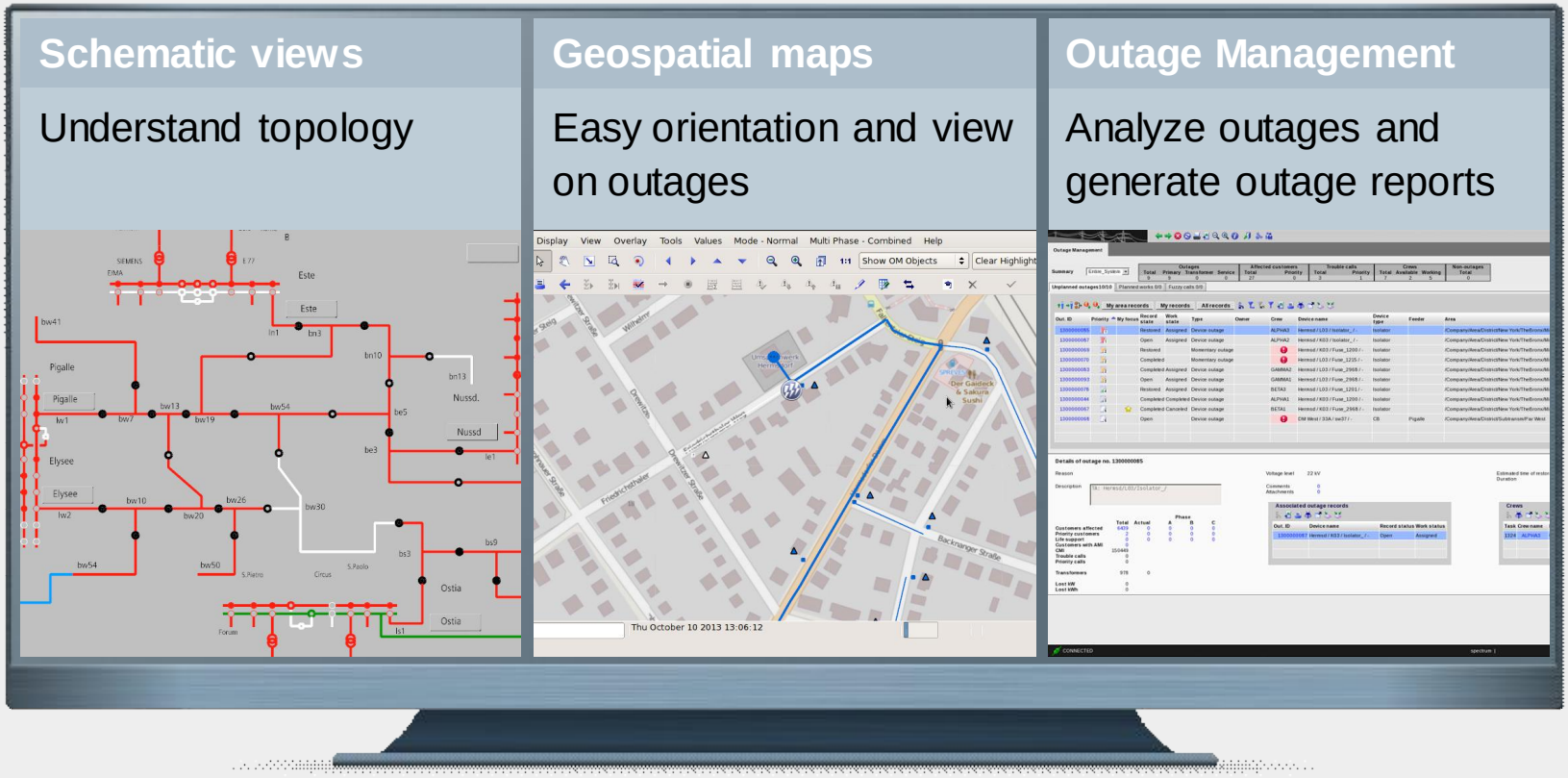
- Estimate and analyze the fault location
- Automate fault isolation and service restoration
- Study and optimize the distribution network operation
- Keep the voltage within the limits and minimize losses

Outage Management

- Management of outages and planned works
- Extended features, e.g. Storm Management, and Outage Prediction
- Crew management
- Trouble call management

Spectrum Power™ ADMS

Leading through One Common User Environment



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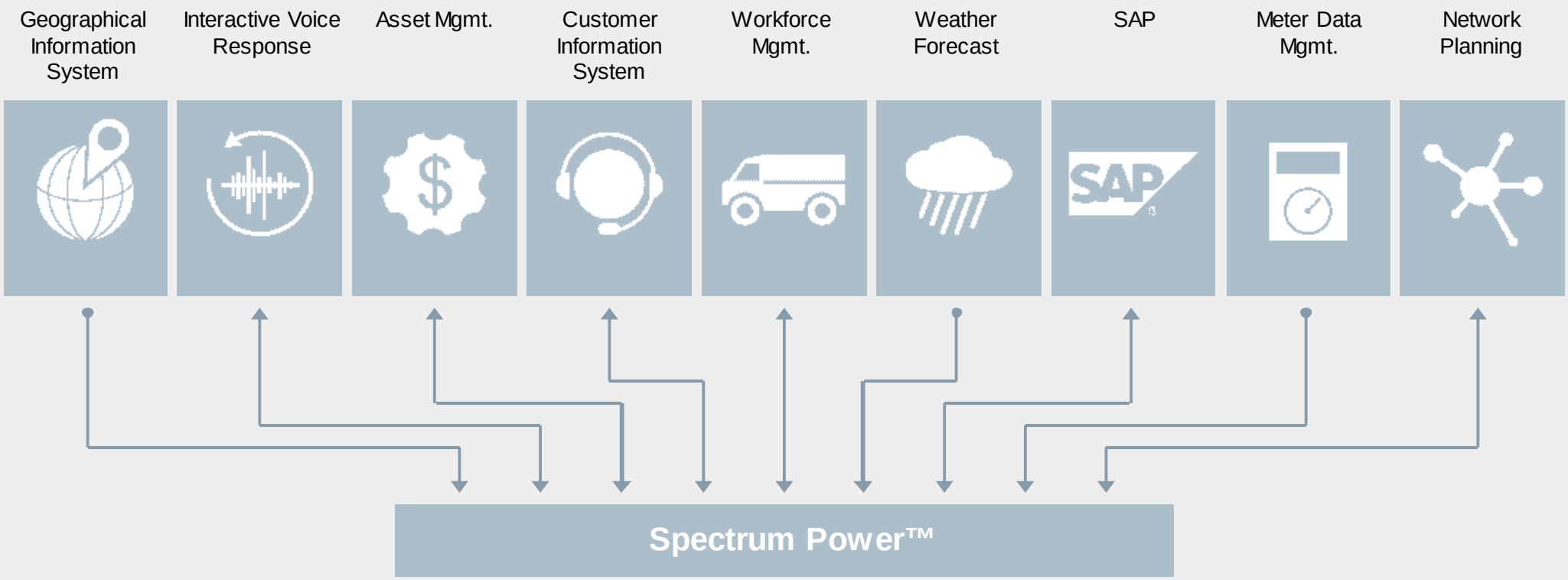
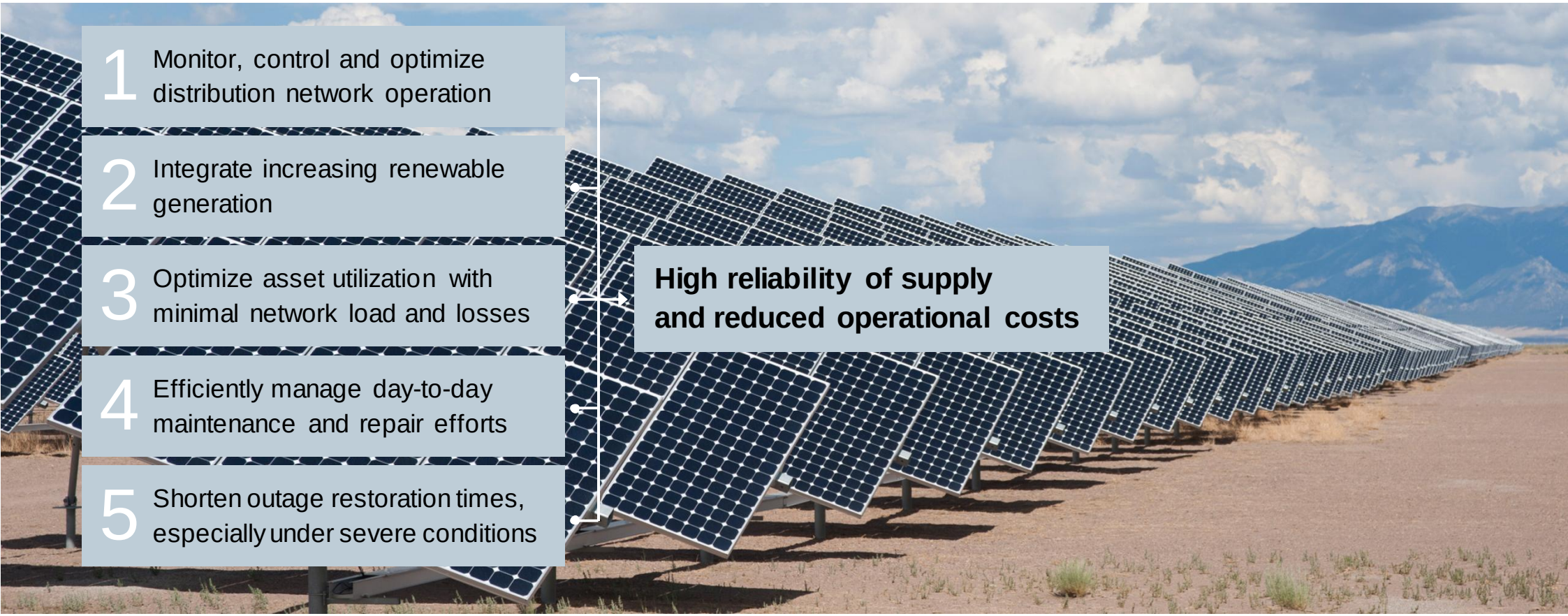
Seamless Integration of Operational IT with Enterprise IT



Spectrum Power™ ADMS
Key Benefits



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Monitor, control and optimize the secure operation of the electrical distribution network.

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Monitor & Operate
SCADA – Highlights

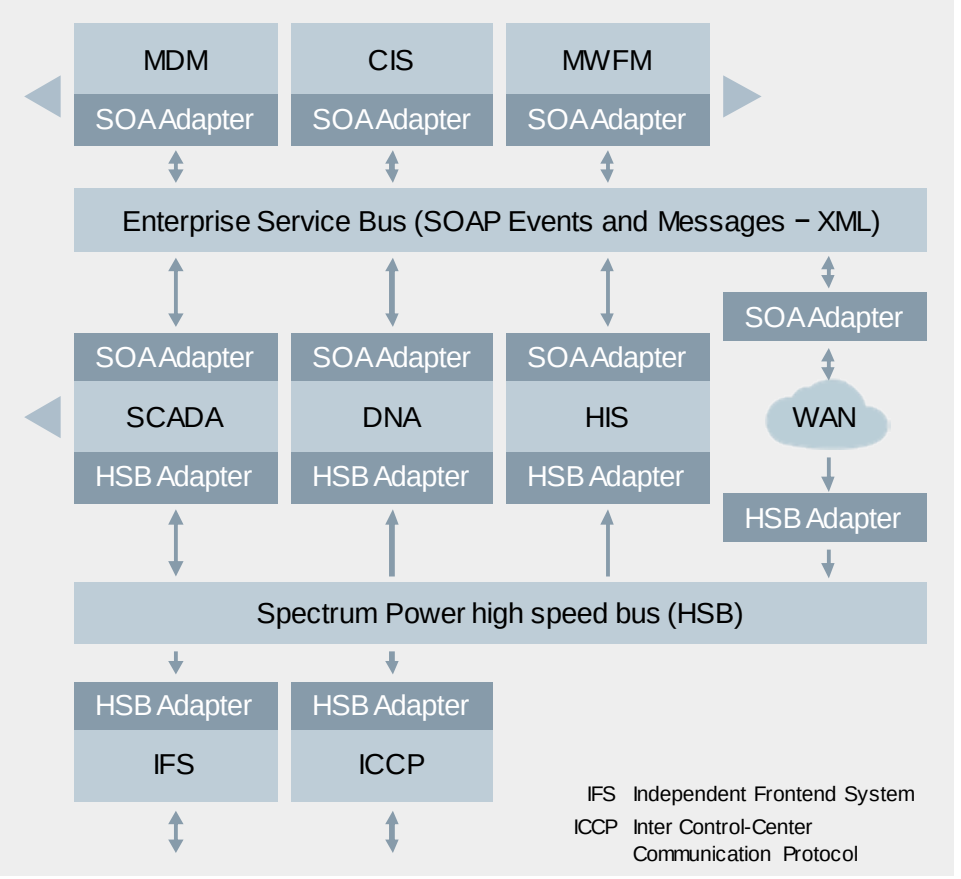
Increased operational efficiency

- Advanced topologic coloring and tracing in single phase and three phase distribution networks
- Extended tracing for outages, trouble calls, crews, etc.
- Easy-to-create switching procedures
- Visualization of switch plan and corresponding topology changes before execution
- Online – editable Temporary Network Elements (TNEs)
- Flexible Load Shedding

Monitor & Operate
Increases business process integration

"Plug and play" architecture for distribution management systems brings IT and OT together for coordinated decision making and operations while enhancing operational efficiency and reliability

- Service Oriented Architecture (SOA) for a standards-based, secure method to connect to a variety of IT systems
- Interfaces support Web Services and Java Messaging Services JMS
- Framework for easy definition of events and messages to external IT systems
- Comprehensive set of pre-defined events and messages for e.g.
  - Meter Data Management (MDM)
  - Customer Information System (CIS)
  - Mobile Workforce Mgmt. (MWFM)



Analyze & Optimize
DNA – Advanced Distribution Network Operation

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Reduced network loading at peak times and increased efficiency and reliability

- Real-time assessment of network status for instant identification of equipment overloads, voltage limit violations, losses, loops, parallels, and other abnormal operating conditions
- Ability to evaluate and optimally select network control actions
- Improved fault location process, incl. coordination with field crews, and accelerated restoration of service
- Improved field crew safety and reduced service interruptions

- Fault Location (FLOC)
- Fault Isolation and Service Restoration (FISR)
- Distribution System Power Flow (DSPF)
- Distribution System State Estimator (DSSE)
- Short Term Load Scheduler (STLS)
- Volt-/Var Control (VVC)
- Short Circuit Calculation (SCC)
- Optimal Feeder Reconfiguration (OFR)

Track & Restore
Outage Management with integrated Trouble Call Management

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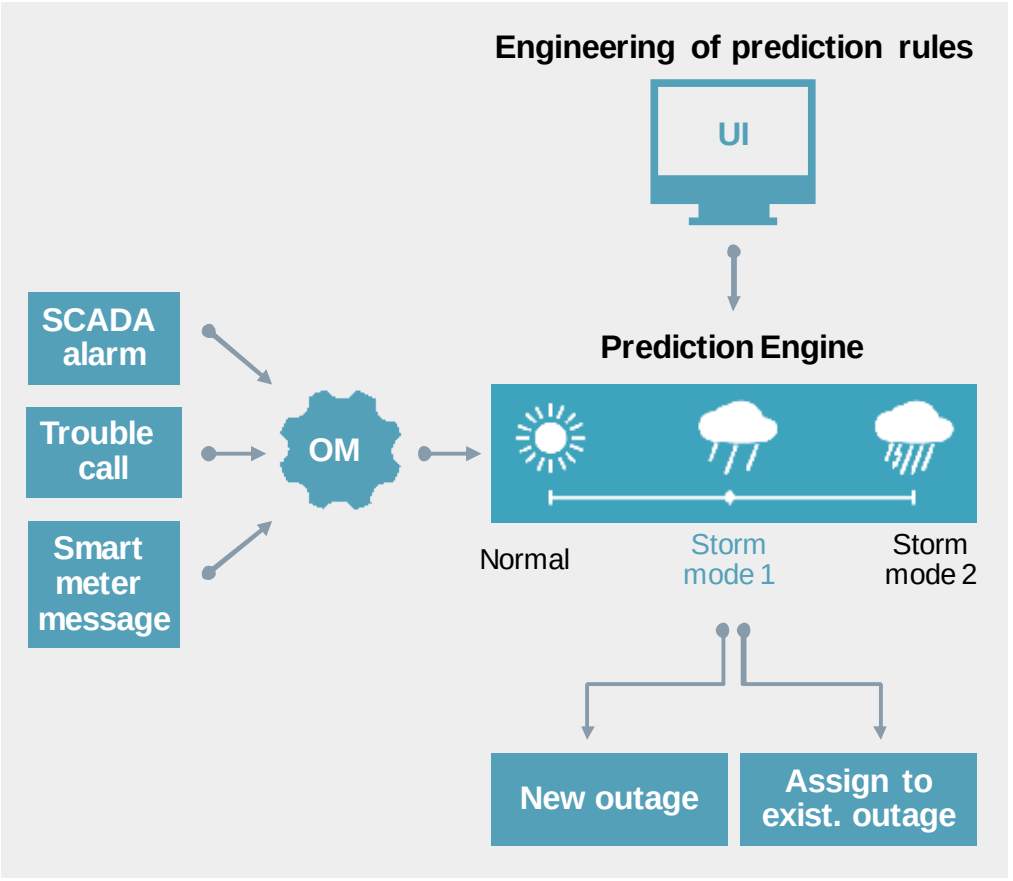
Proactive and safe guidance for operators when needed most

- Fast and efficient handling of unplanned outages and planned work
- Prediction Engine and Rule Engine for all trouble events designed to efficiently handle even a large amount like trouble calls, smart meter messages or SCADA alarms
- Storm Mode to handle extreme weather conditions, with tracking of all outages and damages during the storm
- Seamless workflow – from network diagram to Outage Management OM – and a consistent experience with one Common User Environment
- Improved notification to customers, e.g. through call back registration



Track & Restore

Proactive and safe guidance for operators when needed most

Storm Mode – Focus on the most important during exceptional outage events

- During extreme weather conditions the control system responds adequately and provides the ability to handle the very large number of trouble calls from customers or by smart meters
- With a dedicated Storm Mode User Interface operators can easily prepare affected network areas for an extreme condition using the system's listing of various storm mode events and types
- By activating the storm mode the Outage Prediction Engine will change the rule settings appropriate to guide the operator in the fast and optimized restoration activities

Track & Restore
Your GIS as distribution data source master

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Cost-efficient data maintenance through easy integration of GIS data using the CIM standards (IEC 61970, 61968)

- GIS Smart Integration enables your GIS to be the distribution network definition source master.
- The operational network model is synchronized with model changes implemented in the GIS
- GIS Data Import Management (GDIM) allows for the initial bulk import of all the data from a GIS or for incremental updates, e.g. on a daily basis, with reduced data volume
- Operator changes remain valid during incremental updates
- The geospatial user display is fully integrated in the homogenous user environment allowing fast navigation and simplified workflows

Spectrum Power™ ADMS

Staying ahead of the curve with Spectrum Power ADMS

Proven SOA capabilities	**Front running in IT security (NERC CIP, BDEW…)**	**CIM (IEC 61970, 61968,…) compatibility**	**Standard HW on x86 64bit**	**Online activation**
Enables seamless IT integration and easy extension in response to regulatory changes	Protects your grid against cyber attacks	Protects your investment	Free choice supports your purchasing strategy	Secure data engineering without interruption of the productive system
Back-Up configurations	**Multi-Site configurations**	**Geospatial visualization**	**Fully integrated Outage Management**	**Renewable Generation Integration**
Provides n-1 security up to control center level	Flexible operation sharing and global view on control centers with centralized data engineering	Show dynamic Geospatial data (trouble calls,..) on top of your network an map	Optimized, integrated workflows for shorter outage restoration times	Maximize renewable injection, maintain supply security & power quality and minimize losses

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Thank you for your attention!